Case Report

Serotonin syndrome in a postoperative patient

Minati Choudhury, Milind P Hote, Yashwant Verma

Department of Cardiac Anaesthesia, Cardiothoracic Sciences Centre, AIIMS, New Delhi -110 029, India

Abstract

Depression is common in patients with ischemic heart disease. According to mental health surveys, approximately one-fifth of the patients with angiographic evidence of coronary artery disease have major depression.[1] It is well-recognized that stigma associated with mental disorders leads to individuals avoiding treatment or concealing treatment for them. We report a case of serotonin syndrome that occurred during postoperative period in a patient who underwent coronary artery bypass grafting. The patient was receiving 60 mg/day fluoxetine for the last 4 years, which she and her attendants concealed during the preoperative evaluation. To our knowledge this is the first case of serotonin syndrome, reported in biomedical literature, in a postoperative patient. We suggest that history taking should also focus on antidepressant drug intake by patients. If serotonin syndrome occurs in such patients aggressive and timely management can help avert mortality.

Key words: Cardiac surgery, fluoxetine, serotonin syndrome

Introduction

The serotonin syndrome is a complex and rare condition that results when serotonergic activity increases to abnormally high levels. It is potentially lethal, though timely management can save a patient. To our knowledge, this is the first such report of its occurrence in a postoperative cardiac surgical patient.

Case Report

A 57-year-old female was admitted to our coronary care unit with the complaints of severe chest pain radiating to left arm and diaphoresis. She was a known hypertensive and on oral metoprolol 100 mg/day for the last 7 years. On examination she was found to be tachypnoeic; with a pulse rate 110/minute, regular, normal volume; and blood pressure 165/95 mmHg. Examination of other systems revealed no abnormalities. The biochemical parameters were within normal limits. Troponin-T value was strongly positive. After initial stabilization, she underwent coronary angiography and detected to have triple vessel disease with >80% blockade of all the major coronary vessels. Surgical correction was planned a week later.

She was premedicated with diazepam 10 mg night before, 5 mg in the morning PO and morphine sulfate 0.2 mg/kg, and phenergan 25 mg IM 1 hour before surgery. Metoprolol 50 mg PO was continued till the morning of surgery. The anesthesia induction and maintenance regime included thiopentone sodium, midazolam, fentanyl, rocuronium, and pancuronium. Coronary artery bypass grafting was done under moderate hypothermia and cold blood cardioplegia. The patient was weaned off successfully from cardiopulmonary bypass under the cover of nitroglycerine infusion and shifted to postoperative cardiac surgical intensive care unit. The trachea was extubated 6 hours after surgery. She was found to be comfortable, breathing normally, with blood pressure of 118/68 mmHg, pulse rate 67/minute, and SaO_2 97% in room air. Two hours later she was found to be agitated, had a sudden rise in blood pressure to 200/100 mmHg and diaphoresis. As the last dose of fentanyl was administered 3 hours before extubation, pain was considered the cause and she was administered 1 μ/kg body weight fentanyl to get a quick relief from symptoms. However, instead of relief, she developed myoclonus, headache, nausea, and vomiting. An infusion of nitroglycerine 1 μg/kg/min was started to reduce the blood pressure. A possibility of neurological complication related to cardiopulmonary bypass was thought and an emergency CT scan of the head was performed which

Address for correspondence: Dr. Minati Choudhury, Department of Cardiac Anaesthesia, F/83, Ansari Nagar (West), AIIMS, New Delhi -110 029, India. E-mail: minatichoudhury2002@yahoo.co.in

Access this article online	
Quick Response Code:	Website: www.joacp.org
	DOI: 10.4103/0970-9185.81825

revealed no abnormality. The family was informed of the condition and possibility of an adverse outcome. Her husband revealed that she was under fluoxetine 60 mg/day therapy since the last 18 weeks. The possibility of serotonin syndrome was considered. Diazepam 5 mg was administered IV and cyproheptadine 20 mg PO to reduce the symptoms. The improvement in symptoms was noticed within 4 hours and complete resolution was achieved after 30 hours. Fluoxetine therapy was resumed after 36 hours in a reduced dose of 40 mg/day after a psychiatric consultation. The balance postoperative course was uneventful and she was discharged from hospital on 8th postoperative day.

Discussion

The stigma of mental illness has often been considered a potential cause for reluctance to seek help for mental problems, avoid its treatment, or to hide its treatment. Among the mental illnesses, clinical depression is a very common psychological problem especially in patients suffering from coronary artery disease.[2] A number of medications for depression are available and as they are more effective, more patients are benefiting from them. While antidepressant medications help treat the illness, keeping a track of their adverse effects and drug interactions is becoming more difficult.

All antidepressants have side effects, though all patients do not experience all of them or to same degree.[3] Serotonin reuptake inhibitors (SSRIs) are a family of antidepressants considered to be the current standard of drug treatment for major depression. Fluoxetine was the first selective serotonin reuptake inhibitor to be widely available for the treatment of depression and numerous other neuropsychiatric disorders. Fluoxetine is generally safe and well-tolerated. Common adverse effects reported, with the recommended dose of 20 mg/day, are related to the gastrointestinal system and the nervous system. The approved dose range is up to 80 mg/day, but adverse events are more common when higher doses are used.[4] It is an inhibitor of cytochrome P450 (CYP) 2D6 and other CYP enzymes, which increases the potential for drug interactions, though most of them are not clinically important.

SSRI group of antidepressants have fewer adverse events than the tricyclic antidepressants or MAOIs.[5] Serotonin syndrome is a potentially life-threatening complication of SSRI therapy. The syndrome is produced most often by the concurrent use of two or more drugs that increase brainstem serotonin activity and is often unrecognized due to the nonspecific nature of its symptoms. The physiopathological hypothesis is principally supported by excess stimulation of the central (5HT1a) serotonin receptors. This syndrome is characterized by alterations in cognition, behavior, autonomic nervous system function, and neuromuscular activity.[6] The symptoms can be mild (may or may not concern the patient); moderate (toxicity which causes significant distress and deserves treatment, but is not life-threatening); or severe (a medical emergency characterized by rapid onset of severe hyperthermia, muscle rigidity, and multiple organ failure). Diagnosis of serotonin toxicity is often made on the basis of the presence of at least 3 of the 10 clinical features described by Sternbach (agitation, diaphoresis, diarrhea, hyperreflexia, in-coordination, confusion, hypomania, myoclonus, and shivering).[7] Prevention of the syndrome and its early discovery is essential. Several non-selective anti-serotonin therapies have been tested without much success. Withdrawal of the imputable drug often resolves the symptoms within 24 hours. Symptomatic and supportive care remains the pillar of the treatment. While reviewing literature on the treatment of serotonin syndrome, the authors gathered evidence suggestive of efficacy of chlorpromazine and cyproheptadine to treat it. The evidence for cyproheptadine is less substantial, perhaps because the dose of cyproheptadine necessary to ensure blockade of brain 5-HT2 receptors is 20–30 mg, which is higher than that used in the cases reported to date (4–16 mg).[8] Our patient responded to a dose of 20 mg cyproheptadine and 5 mg diazepam. There are few case reports supporting serotonin syndrome caused by fluoxetine but none in a postoperative patient or with the use of fentanyl.[9,10]

With the increasing availability of agents with serotonergic activity, physicians need to be more aware of serotonin syndrome. This case highlights the complex nature of presentation of serotonin syndrome, the importance of early recognition, and the treatment of a potentially life-threatening yet easily avoidable condition. The authors emphasize that history taking should also focus on antidepressant medication intake by the patient.

References

1. Jiang W. Impacts of depression and emotional distress on cardiac disease. Cleve Clin J Med 2008;75:S20-5.
2. Lauber C. Stigma and discrimination against people with mental illness. Epidemiol Psichiatr Soc 2008;17:10-3.
3. Simon Ge, Savarino J, Operskalski B, Wang PS. Suicide risk during antidepressant treatment. Am J Psychiatry 2006;163:41-7.
4. Gram L. Fluoxetine. N Engl J Med 1994;331:1354-61.
5. Anderson M. Selective serotonin reuptake inhibitors versus tricyclic antidepressants: A meta analysis of efficacy and tolerability. J affect Disord 2000;58:19-23.
6. Libert R, Gavey N. There are always two sides to these things: Managing the dilemma of serious adverse effects from SSRIs. Soc Sci Med 2009;68:1882-91.
7. Sternbach H. The serotonin syndrome. Am J Psychiatry

1991;148:705-13.
8. Dvir Y, Smallwood P. Serotonin syndrome: A complex but easily avoidable condition. Gen Hosp Psychiatry 2008;30:284-7.
9. Ghanizadeh A, Ghanizadeh M, Saifoori M. Can fluoxetine alone cause serotonin syndrome in adolescents. Psychopharmacol Bull 2008;41:76-9.
10. Kesavan S, Sobala GM. Serotonin syndrome with fluoxetine plus fentanyl. J K Soc Med 1999;92:474-5.

Source of Support: Nil, **Conflict of Interest:** None declared.